



## SFP-1GB-DW3744-120-AV-SKY

ADVA® Compatible 1000Base-DWDM SFP+ Transceiver 50GHz (SMF, 1547.72nm to 1542.14nm, 120km, LC, DOM)

### Product Description

This ADVA® compatible SFP transceiver provides 1000Base-DWDM throughput up to 120km over single-mode fiber (SMF) using a wavelength of 1547.72nm to 1542.14nm via an LC connector. It can operate at temperatures between 0 and 70C. Our transceiver is built to meet or exceed OEM specifications and is guaranteed to be 100% compatible with ADVA®. It has been programmed, uniquely serialized, and tested for data-traffic and application to ensure that it will initialize and perform identically. All of our transceivers comply with Multi-Source Agreement (MSA) standards to provide seamless network integration. Additional product features include Digital Optical Monitoring (DOM) support which allows access to real-time operating parameters. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

Skylane's transceivers are RoHS compliant and lead-free.

### Features:

- EML Tunable Transmitter
- DWDM with 100GHz ITU Grid
- Hot Pluggable
- SFP MSA Compliant
- Duplex LC Connector
- Up to 1.25Gbps Bi-directional Data Links
- Class 1 Laser Safety Certified
- Up to 120km on 9/125um SMF
- RoHS Compliant and Lead-Free
- Operating Temperature: 0 to 70 Celsius



### Applications:

- Gigabit Ethernet over DWDM
- Access, Metro and Enterprise

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*For your product safety, please read the following information carefully before any manipulation of the transceiver:*



#### ESD

This transceiver is specified as ESD threshold 1kV for SFI pins and 2kV for all others electrical input pins, tested per MIL-STD-883G, Method 3015.4 / JESD22-A114-A (HBM). However, normal ESD precautions are still required during the handling of this module.



#### LASER SAFETY

This is a Class1 Laser Product according to IEC 60825-1:2007. This product complies with 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated (June 24, 2007).

*The optical ports of the module need to be terminated with an optical connector or with a dust plug in order to avoid contamination.*

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## Channel Wavelengths

| Channel   | Frequency (THz) | Wavelength (nm) |
|-----------|-----------------|-----------------|
| CH20-CH28 | 192.00-192.80   | 1561.42-1554.94 |
| CH29-CH36 | 192.90-193.60   | 1554.13-1548.51 |
| CH37-CH44 | 193.70-194.40   | 1547.72-1542.14 |
| CH45-CH52 | 194.50-195.20   | 1541.35-1535.82 |
| CH53-CH60 | 195.30-196.00   | 1535.04-1529.55 |

## Absolute Maximum Ratings

| Parameter             | Symbol | Min. | Typ. | Max. | Unit | Notes |
|-----------------------|--------|------|------|------|------|-------|
| Data Rate             | DR     |      |      | 1.25 | Gbps |       |
| Operating Temperature | Tc     | 0    |      | 70   | °C   |       |
| Storage Temperature   | Tstg   | -40  |      | 85   | °C   |       |
| Maximum Voltage       | Vcc    | -0.5 |      | 4    | V    |       |

## Electrical Characteristics

| Parameter                      | Symbol  | Min.  | Typ. | Max.    | Unit  | Notes |
|--------------------------------|---------|-------|------|---------|-------|-------|
| Supply Current                 | Icc     |       |      | 606     | mA    |       |
| Input Voltage                  | Vcc     | 3.135 | 3.3  | 3.465   | V     |       |
| Power Dissipation              | PD      |       |      | 2.0     | W     |       |
| Transmitter                    |         |       |      |         |       |       |
| Input Differential Impedance   | ZIN     |       | 100  |         | Ω     |       |
| Differential Data Input Swing  | VIN,pp  | 180   |      | 900     | mVp-p |       |
| Transmit Disable Voltage       | VD      | 2.0   |      | Vcc+0.3 | V     |       |
| Transmit Enable Voltage        | VE      | 0     |      | 0.8     | V     |       |
| Receiver                       |         |       |      |         |       |       |
| Differential Output Impedance  | ZOUT    |       | 100  |         | Ω     |       |
| Differential Data Output Swing | VOUT,pp | 450   | 600  | 900     | mV    |       |
| LOS Assert Voltage             | VLOSA   | 2.0   |      | Vcc     | V     |       |
| LOS De-Assert Voltage          | VLOSD   | 0     |      | 0.8     | V     |       |

### Notes:

1. For the electrical power interface.

## Optical Characteristics

| Parameter                   | Symbol            | Min.    | Typ. | Max.    | Unit    | Notes |
|-----------------------------|-------------------|---------|------|---------|---------|-------|
| Transmitter                 |                   |         |      |         |         |       |
| Launch Optical Power        | Po                | -1.0    |      | 4.0     | dBm     | 1     |
| Center Wavelength           | $\lambda_C$       | 1554.94 |      | 1561.42 | nm      |       |
| Center Wavelength Spacing   |                   |         | 100  |         | GHz     |       |
| Center Wavelength Deviation | $\Delta\lambda_C$ | -12.5   |      | 12.5    | GHz     |       |
| Wavelength Tuning Time      |                   |         |      | 2       | seconds |       |
| Extinction Ratio            | ER                | 9       |      |         | dB      | 2     |
| Side-Mode Suppression Ratio | SMSR              | 30      |      |         | dB      |       |
| POUT @Tx_Disable Asserted   | Poff              |         |      | -30     | dBm     | 1     |
| Receiver                    |                   |         |      |         |         |       |
| Optical Center Wavelength   | $\lambda_C$       | 1260    |      | 1620    | nm      |       |
| Receiver Sensitivity @120km | S                 |         |      | -30     | dBm     | 3     |
| Receiver Overload           | POL               | -7      |      |         | dBm     |       |
| Optical Return Loss         | ORL               |         |      | -27     | dB      |       |
| LOS Assert                  | LOSA              | -45     |      |         | dBm     |       |
| LOS De-Assert               | LOSD              |         |      | -31     | dBm     |       |
| LOS Hysteresis              | LOSH              | 0.5     |      |         | dB      |       |

### Notes:

1. The optical power is launched into 9/125 $\mu$ m SMF.
2. Measured with a PRBS7 test pattern @1.25Gbps.
3. Measured with a PRBS7 test pattern @1.25Gbps. BER=1E<sup>-12</sup>.

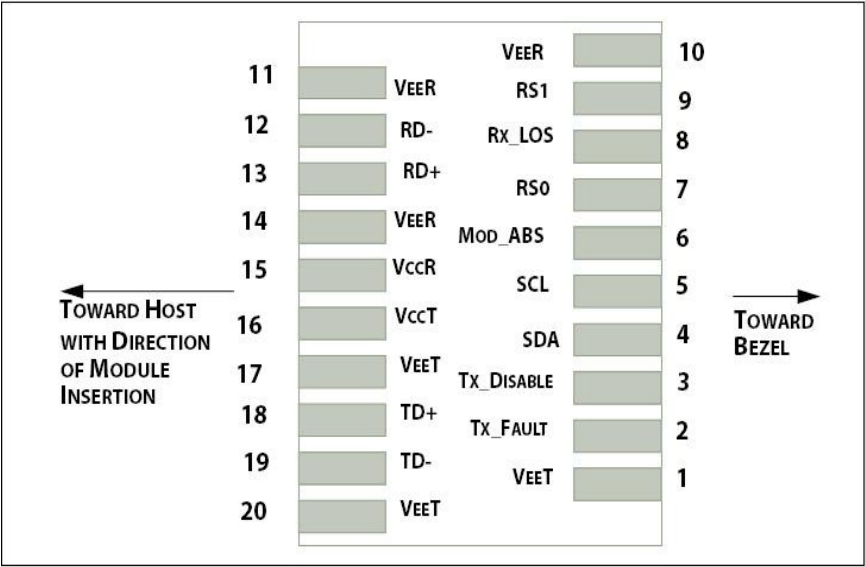
## Pin Descriptions

| Pin | Symbol     | Name/Description                                                           | Notes |
|-----|------------|----------------------------------------------------------------------------|-------|
| 1   | VeeT       | Transmitter Ground.                                                        | 1     |
| 2   | Tx_Fault   | Transmitter Fault (LVTTTL-O). "High" indicates a fault condition.          | 2     |
| 3   | Tx_Disable | Transmitter Disable (LVTTTL-I). "High" or "open" disables the transmitter. | 3     |
| 4   | SDA        | 2-Wire Serial Interface Data (LVCMOS-I/O) (MOD-DEF2).                      | 4     |
| 5   | SCL        | 2-Wire Serial Interface Clock (LVCMOS-I/O) (MOD-DEF1).                     | 4     |
| 6   | MOD_ABS    | Module Absent Output. Connected to the VeeT or VeeR in the module.         | 5     |
| 7   | RS0        | No Connection Required.                                                    |       |
| 8   | Rx_LOS     | Receiver Loss of Signal (LVTTTL-O).                                        | 2     |
| 9   | RS1        | No Connection Required.                                                    |       |
| 10  | VeeR       | Receiver Ground.                                                           | 1     |
| 11  | VeeR       | Receiver Ground.                                                           | 1     |
| 12  | RD-        | Receiver Inverted Data Out. CML-O.                                         |       |
| 13  | RD+        | Receiver Data Out. CML-O.                                                  |       |
| 14  | VeeR       | Receiver Ground.                                                           |       |
| 15  | VccR       | +3.3V Receiver Power Supply.                                               |       |
| 16  | VccT       | +3.3V Transmitter Power Supply.                                            |       |
| 17  | VeeT       | Transmitter Ground.                                                        | 1     |
| 18  | TD+        | Transmitter Data In. CML-I.                                                |       |
| 19  | TD-        | Transmitter Inverted Data In. CML-I.                                       |       |
| 20  | VeeT       | Transmitter Ground.                                                        | 1     |

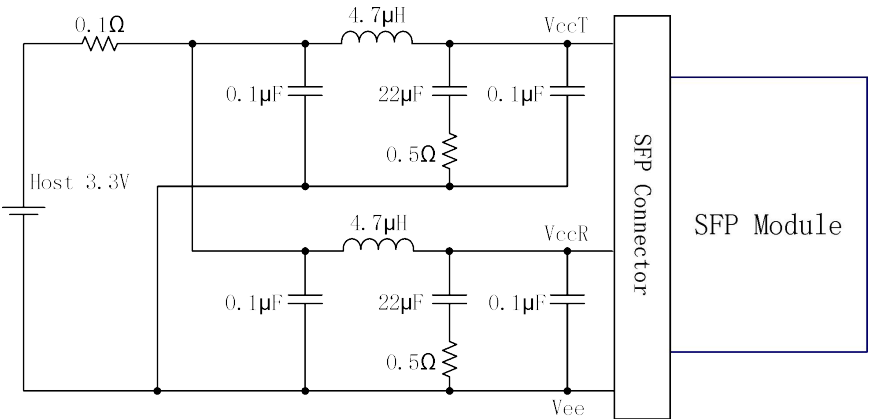
### Notes:

1. The module signal grounds are isolated from the module case.
2. This is an open collector/drain output that, on the host board, requires a 4.7k $\Omega$  to 10k $\Omega$  pull-up resistor to the Host\_Vcc.
3. This input is internally biased "high" with a 4.7k $\Omega$  to 10k $\Omega$  pull-up resistor to the VccT.
4. 2-wire serial interface clock and data line requires an external pull-up resistor.
5. This is a ground return that, on the host board, requires a 4.7k $\Omega$  to 10k $\Omega$  pull-up resistor to the Host\_Vcc.

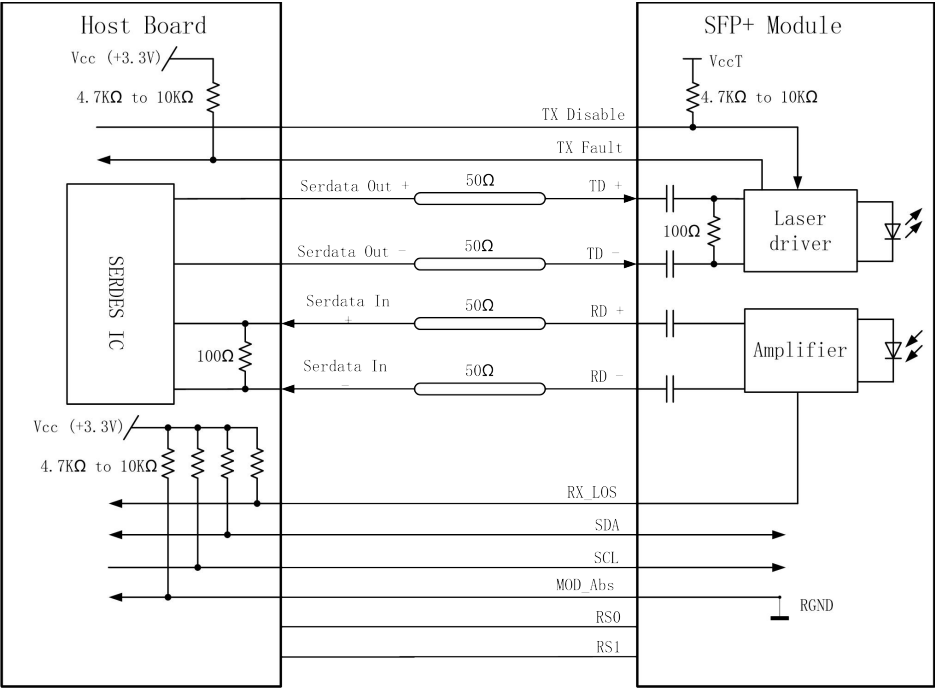
Electrical Pad Layout



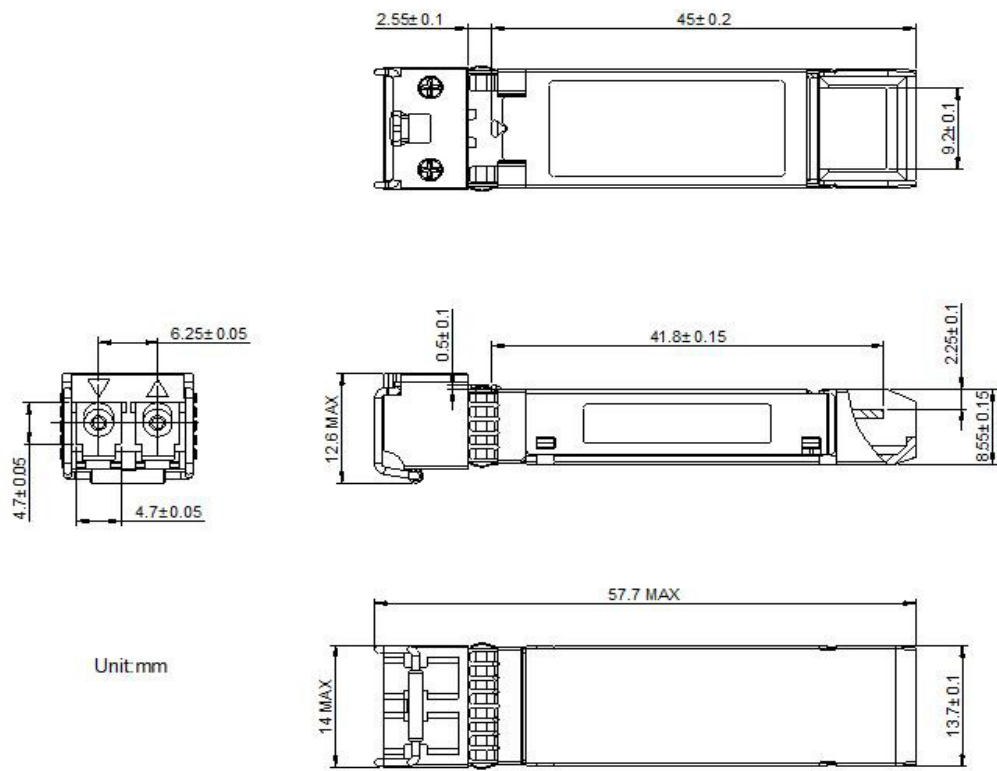
Recommended Host Board Supply Filter Network



Block Diagram of Transceiver



Mechanical Specifications



# About Skylane Optics

Skylane is a leading provider of transceivers for optical communication.

We offer an extensive portfolio for the enterprise, access, datacenter and metropolitan fiber optical market as well as for smart home applications and home networks.

We cover the European, South American and North American market with a strong partner network and have offices in Belgium, Brazil, Sweden and USA.

Our offerings are characterized by high quality and performance. In combination with our strong technical support, we enable our customers to build cost optimized network solutions.

We offer an extensive range of high-quality products including transceivers (Optical and copper), Active Optical Cable (AOC), Direct Attach Cable (DAC), Mux/Demux, Coding Box.

